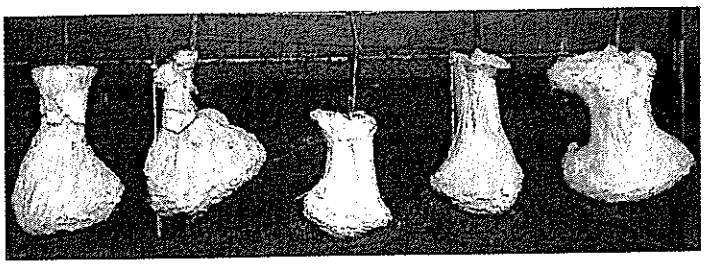

FIG. 1. Polyurethane nest molds of the five Kemp's Ridley Seaturtles showing differences in size and shape.

LEPIDOCHELYS KEMPII (Kemp's Ridley Seaturtle). **NEST ARCHITECTURE**. Studies describing sea turtle nest architecture have been largely limited to the Loggerhead Seaturtle (Carthy 1996. The Role of the Egg Shell and Nest Chamber in Loggerhead Turtles [*Caretta caretta*] Egg Incubation. Ph.D. dissertation. Univ. Florida, Gainesville. 123 pp.; Tiwari et al. 2003. Herpetol. Rev. 34:138–139). Here we report nest architecture data for the highly endangered Kemp's Ridley.

Data were collected from five nesting Kemp's Ridley seaturtles during the 2001 nesting season at Rancho Nuevo, Tamaulipas, Mexico. After recording standard size and clutch data, each turtle was removed from the nest after oviposition but prior to refilling. The eggs were removed, and the egg chamber cleaned of any loose sand and debris. A cast was made by filling the entire nest cavity with minimally expanding polyurethane construction foam and allowed to cure. Excess foam was cut off at the top of the nest structure flush with the surface of the sand and the cast excavated. A typical sea turtle nest is roughly urn-shaped, consisting of a narrow neck with a larger egg chamber at the bottom. The maximum diameters of the neck and egg chamber were measured as well as the distance from the top of the sand to the top and bottom of the egg chamber. Nest volumes were determined by measuring the amount of water displaced when the cast was submerged.

Mean carapace lengths (CCL) and weights of the five turtles were 69.8 cm (± 3.2) and 38.0 kg (± 2.9), and all five turtles were observed to have normal rear flippers. The mean number of eggs per nest was 96.4 (± 16.1). The mean depths from the top to the bottom of the nests were 21.6 cm (± 2.6) and 39.6 cm (± 3.6), and the mean diameters of the neck and egg chamber were 13.6 cm (± 1.7) and 28.0 cm (± 2.0), respectively. The mean nest volume was 6620 ml (± 2510).

The shapes and sizes of these nests varied considerably (Fig. 1). The shapes were probably influenced by the substrate in which the nests were constructed and the location on the beach. Substrate materials ranged from moist broken shell to dry rocky sand/soil. Variation in the dimensions of the nests, and resultant volumes, could also be attributed to the type of substrate, turtle size, and possibly the number of eggs deposited. There was a positive, but weak, correlation between the number of eggs per nest and nest volume ($r = 0.422$), while better relationships were found for turtle length and nest volume ($r = 0.835$), and turtle weight and nest volume ($r = 0.932$). Consequently, Kemp's Ridley nest sizes appear to be more of a function of turtle size and not clutch size, although a larger sample size would increase confidence in statistical analyses.

It is difficult to compare nest cast sizes with those previously done for Loggerheads because of different measuring techniques. However nest volumes for the Kemp's Ridleys and the Florida and Brazilian Loggerheads (Tiwari et al., *op. cit.*) averaged 6620 ml, 11030 ml, and 11757 ml, respectively. The much larger Loggerhead nest size undoubtedly reflects the equally large difference in mature sizes between Kemp's Ridleys (65 cm) and Loggerheads (90 cm), respectively (Marquez 1994. NOAA Tech. Memo. NMFS-SEFSC-343, 91 pp.; Dodd 1988. U.S. Fish Wildl. Serv. Biol. Rep. 88[14], 110 pp).

Conservation biologists at Rancho Nuevo currently relocate almost all nests to protected corrals, using a manual post-hole digger to excavate the main part of the nest. The egg chamber is then hand sculpted at the bottom of the hole and the eggs are then deposited and covered with sand. The depth of the relocated nests is currently 45 cm and the dimensions of the egg chambers are at the discretion of the individuals transplanting that particular nest. The five nests observed in this study ranged in depth from 38–45 cm (mean = 39.6). This is shallower than the standard 45 cm currently used in the corrals. Also, when hundreds of nests are being transplanted in a single day, the sizes of the egg chambers tend to be smaller than naturally occurs (pers. obs.). Perhaps the percent hatching success rate might increase from the present 55–65% by making the nest hole shallower and the egg chamber larger. However, a follow up study using a larger sample size should be undertaken before changes in the current conservation techniques are considered.

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